

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2004/003267

International filing date (day/month/year)
28.07.2004

Priority date (day/month/year)
28.07.2003

International Patent Classification (IPC) or both national classification and IPC
G01V3/15, G01V3/06, H01Q1/04

Applicant
ELECTROMAGNETIC GEOSERVICES AS

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/003267

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/003267

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Yes: Claims

No: Claims 1-9,15-18,21,22,24,25,28-30,32-35

Inventive step (IS)

Yes: Claims

No: Claims 10-14,19,20,23,26,27,31

Industrial applicability (IA)

Yes: Claims

1-35

No: Claims

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Section V:

1. Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure:

D1: US-A-4 617 518 (SRNKA LEONARD J) 14 October 1986 (1986-10-14)

D2: WO 03/034096 A (SINHA MARTIN C ; MACGREGOR LUCY M (GB); UNIV SOUTHAMPTON (GB)) 24 April 2003 (2003-04-24)

D3: US-B-6 236 211 (WYNN JEFFREY C) 22 May 2001 (2001-05-22)

D4: US 2003/050759 A1 (CARAZZONE JAMES J ET AL) 13 March 2003 (2003-03-13)

D5: US-A-4 298 840 (BISCHOFF JUERGEN H ET AL) 3 November 1981 (1981-11-03)

2. Novelty

- 2.1 The subject-matter of independent apparatus claim 1 is not new (Article 33 (2) PCT). D1 discloses, using the wording of the claim, an EM transmitter comprising a current source (D1, column 4, lines 62-65) and a dipole antenna, the dipole antenna comprising a first electrode (D1, Fig. 1, 33) mounted on a cable and located near to the current source and a second electrode (D1, Fig. 1, 34) mounted on a cable and located further away from the current source, each electrode being electrically connected to the current source. Thus, D1 anticipates the subject-matter of Claim 1.
- Additionally, it is pointed out that documents D2-D5, see passages and figures mentioned in the Search Report, also anticipate the subject-matter of Claim 1.
- 2.2 The objection lack of novelty applies equally to independent method type Claims 33-35, because therein various methods for operating an EM transmitter according to Claim 1 are presented. These methods are already disclosed in detail in documents D4, D1 and D2 (see D4, Fig. 5, 61, 63; D1, Fig. 1, 1, 30, 33, 34, 36-39; D2, Fig. 1, 6, 14, 22, 24, 26, 28).
- 2.3 Dependent Claims 2-9, 15-18, 21, 22, 24, 25, 28-30, 32 do not appear to contain any additional features, which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty (Article 33 (2)), the reasons being as follows:
- * Claims 3, 4, 18, 21, 22, 24, 25, 28-30: The additional features of these claims are known from D1 (see also D1, Fig. 1, 1, 30, 31, 33, 34, 36-39; column 4, lines 50-55; column 5, lines 15-18; Fig. 1, 40; column 5, lines 3-4) and D2 (D2, Fig. 2, 38, 40, 42, 44);
 - * Claim 2: An EM transmitter with electrodes mounted on different cables is

- known from D2 (D2, Fig. 2, 38, 40, 42, 44);
- * Claims 5, 6, 9, 32: The additional features of these claims are disclosed in D3 (D3, column 4, lines 8-12; Fig. 2, 14, 18; Fig. 2, 26);
 - * Claims 15-17: Dipole lengths as set out in these claims are known from D4 (D4, paragraph 46, lines 12);
 - * Claims 7, 8: These additional features are known from D5 (see D5, Fig. 2, 1, 6, 7; Fig. 3, 15, 16, 6).

3. Inventive Step

The subject-matter of Claim 10-14, 19, 20, 23, 26, 27, 31 does not involve an inventive step (Article 33 (3) PCT), the reasons being as follows:

- * Claims 11, 23, 26, 27, 31: Water depth control of towed cables of variable length using depth sensors, position sensors and buoyancy elements are well known in this technical field (cf. D1, Fig. 1, 40);
- * Claims 12-14: Electrodes, which are several metres long, are in common use in electromagnetic sea floor survey systems and, hence, well known to the skilled person;
- * Claims 10, 19, 20: A gridded electrode is one out of several straightforward design possibilities for the skilled person. Further, braided conductors are well known in the field of high power transmission cables.

Section VII:

The Applicants are requested to file new clarified claims which take account of the above objections. Further, attention is drawn to the following points:

- * To meet the requirements of Rule 6.3(b) PCT, the independent claims should be properly cast in the two part form, with those features which are part of the prior art (see D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and the subject-matter, for which protection is sought, being placed in the characterising portion (Rule 6.3(b)(ii) PCT). The remaining claims should be adapted to these new claims.
- * In order to indicate more completely the background art useful for understanding the invention, the abovementioned document D1 should be acknowledged in the description (Rule 5.1(a)(ii) PCT).
- * As a precaution, care should be taken to avoid giving rise to objection under Articles 34(2)(b) and 41(2) PCT by the inadvertent addition or deletion of subject-matter which extends the content of the application beyond that of the application as filed.

Section VIII:

The application does not fulfill the requirement of Article 6 PCT, the reasons being as follows:

- * Claim 1: The relative terms 'near' and 'further away' are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer (PCT GL II 5.34);
- * Claim 3: The spatial arrangement of the electrodes is not clear (PCT GL II 5.31);
- * Claims 28-30: These claims try define the subject-matter by a result to be achieved, rather than giving all necessary technical features to obtain this result (PCT GL II 5.31);
- * Claims 26-30: Further, technical features following expressions like 'preferably' have no limiting effect on the scope of the claim (PCT GL II 5.40);
- * Reference numbers in the description on page 3, line 28-29 and page 4, line 5 concerning front cable and front electrode are inconsistent. Further, reference numbers concerning wires and optical fibres on page 5, lines 10-11 are not consistent with the figure to which they refer.